

# Number Agreement Between Verb and Coordinated Subject

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**Park, Sang-Hee. 2007. Number Agreement Between Verb and Coordinated Subject. *SNU Working Papers in English Linguistics and Language* 6, 68-77.** Agreement phenomena have been considered as one of the most problematic areas in syntax. While this is an indisputable fact, processing-based strategic account (Morgan 1972, Reis 1974, Corbett 1991, Peterson 1986; 2004) has also failed to capture a general fact about the number agreement between verb and coordinated subject. Limiting the discussion to and-coordinated NP subjects, this paper discovers that the grammatical number of conjuncts and that of the coordinated NP are correlated: the verb agrees with its coordinated subject as if it is a single plural noun. It is further proposed that semantic properties of the conjuncts also operates on deciding the number of the NP coordination. Thus, singular agreement is licensed if the coordination contains singular conjuncts which can be merged into a single semantic property.

**Keywords:** number agreement, *and*-coordination, NP, conjuncts, semantic properties

## 1. Introduction

The starting point for this paper is a curious fact about agreement and coordination. While the subject-verb agreement rule is universally assumed in many syntactic theories, it does not seem to effect when the subject is coordinated. This superficial lack of agreement rule in the area of coordination have been accounted for in many studies: some of them uses the notion of 'strategies (Morgan 1972, Reis 1974, Corbett 1991, Peterson 1986; 2004)', and others make generalizations (Sag et al. 1985) or build constraints specific for this phenomena (Chan Chung 2006).

The aim of this paper is to investigate the number agreement between verbs and coordinated subjects based on a corpus of present day English. The findings of this paper reveals that the previous analyses lack precise observations on this phenomena. I have limited the discussion to NPs with coordinator *and*, and the generalization from the findings do not

intend to be extended to other coordination phrase.

## 2. Previous studies

### 2.1 Peter G. Peterson (2004)

Peterson (2004) presents a Lexical Functional Grammar-based analysis of coordination in terms of the distribution of grammatical functions like SUBJ(ECT) and PRED(ICATE). He observes that while these functions are distributed across all conjuncts, lexical properties such as number and person are not shared across the coordination phrase. This follows the fact that coordination is not a headed construction: there is no percolation path for features from individual conjuncts to the node dominating the coordination. Thus, conjuncts in a coordinated NP do not 'agree' in their lexical properties (as in (1a)), nor the properties distribute beyond the NP coordination (as in (1b)):

- (1) a. The old man [sg] and his two grandchildren [pl] waited patiently for the bus.  
 b. The dog [sg] and the cat [sg] are in the garden.  
 (Peterson 2004: 667)

According to Peterson (2004), the verb *are* in (1b) contains the information [ $\uparrow$  SUBJ NUM = PL], which specifies that the grammatical number of its subject must be plural. This information is then assumed to flow to the coordinated NP, ascribing the plural value to it. Since this plurality does not affect the individual conjuncts within the subject NP, it is hypothesized that the grammar cannot account for agreement between a verb and its coordinated subject. Rather, as he explains, the subject NP accepts whatever value ascribed by the verb. However, for the same reason the grammar also allows for sentences like (2):

- (2) \*Kim and Pat is happy. (Peterson 2004: 669)

The ungrammaticality of this sentence as well as the variability of agreement in (3) is explained under the notion of 'strategies'<sup>1</sup>, rather

1) a term first used in this context by Morgan (1972) and Corbett (1991)

than rules of agreement.

- (3) a. %Either Kim or Pat is responsible for the damage.
- b. %Either Kim or Pat are responsible for the damage.

(Peterson 2004: 671)

Peterson (2004) ascribes this various agreement to the lack of the grammar in the area of agreement with coordinated subjects, and to the assumption that speakers resort to various strategies to determine verbal number.

While this analysis gains an insight into the exocentric nature of coordination and succeeds in accounting for speakers' various choice for agreement, it fails to block ungrammatical sentences like (2). In fact ungrammaticality, which is overlooked here, is different from acceptability: while the various choice for agreement in (3) could be an evidence of speakers' different assumptions on grammar, the judgement on (2) is consistent among speakers.

## 2.2 Chan Chung (2006)

From a Head-driven Phrase Structure Grammar, Chan Chung (2006) explores coordination phenomena under the notion of ellipsis proposed by Beavers and Sag (2004, B&S, hereafter). Unlike in B&S, he treats NP coordination as an instance of constituent coordination<sup>2)</sup>, where two NPs are conjoined<sup>3)</sup>. Considering examples from Sag et al. (1985), he observes that NPs with inconsistent number values can be coordinated:

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- 2) a constituent coordination observes 'constraint on disambiguation', which states that in a constituent coordination structure, i) the conjuncts form a constituent at their own, and ii) the conjuncts are in the same syntactic category. (Chan Chung 2006: 30-31)
  - 3) In B&S, an ill-formed sentence like (1b) is licensed by an ill-formed sentence like (1d). Likewise, a well formed sentence like (2b) is allowed to be licensed from an ill-formed sentence like (2a):
    - (1) a. John is my favorite friend and Mary is my favorite friend (too).
    - b. \*John is my favorite friend and Mary is my favorite friend (too).
    - (2) a. \*John are my favorite friends and Mary are my favorite friends (too).
    - b. John are my favorite friends and Mary are my favorite friends (too).

- (4) a. The boys and the girls seem/\*seems happy.
- b. Either the boys or the girls are/\*is going to be there.
- c. The students and professor Swanson are/\*is meeting in the park.
- d. Either Dana or Lee is/are going to lead the parade.
- e. Kim and Terry are/\*is happy.

(Sag et al. 1985, Chan Chung 2006: 3)

In his view, these examples raise a question of what feature values the coordinated NP carries. Accepting Peterson's (2004) analysis, he partly assumes the notion of speakers' strategies, while incorporating the possible number value as a syntactic constraint in (5):

- (5) Constraints on the number feature
  - a. The NUMBER value of the mother is plural when NPs are conjoined. (General)
  - b. The NUMBER value of the mother is singular when singular NPs are conjoined with *or*. (Specific)

(Chan Chung 2006: 23)

The constraint above stipulates that the number value of a coordinated NP is always plural unless the general rule is overridden by the specific rule when NPs are coordinated with *or*. Thus the ungrammatical sentence like (2) can be ruled out by this constraint, which was assumed to be allowed on syntactic level in Peterson (2004). Despite this advantage, the constraint in (5) confronts counterexamples like (6).

- (6) a. The anxiety and anger is then taken away and suddenly erupts in the family environment, placing stress on other member of the household.
- b. Neither geologic evidence nor physical theory supports this conclusion.

(Biber et al. 2003: 234)

The agreement in (6) is not expected to be possible in Chan Chung (2006), but is perfectly grammatical. This suggests that the constraint in (5) is too strong, and we might resort to Peterson (2004)'s analysis. But we also observed that 'strategies'account is too weak in the sense that it allows for syntax to license illegal agreement.

### 3. A new approach: a corpus-driven analysis

As already discussed in the previous section, 'strategies' alone cannot account for agreement with coordinated NPs. Thus it seems to be necessary to introduce a constraint like the one proposed in Chan Chung (2006), which apparently needs modification. However, the present paper does not aim to explore such a new constraint. Rather, we will observe corpus data in order to achieve a proper understanding on agreement with coordinated NPs. In this process, we will examine to what extent the agreement with coordinated NPs varies. Our findings will display that there are consistency rather than speakers' various choice at least when NPs are coordinated with and.

#### 3.1 Selection of the data

The data in the present paper are collected from the British National Corpus (BNC), which totals over 100 million words analyzed and marked up with part of speech (POS) tags. First of all, I make it clear that the selection of the data is limited to coordinated NPs with the prototypical coordinator and. The findings of this paper are not intended to be extended to cover NPs with other coordinators, since agreement with coordinated subjects depends on the lexical properties of a coordinator<sup>4</sup>). I assume that these are a matter of idiosyncrasy.

Second, only [noun and noun] sequences in subject position immediately followed by verb phrases are gathered into data. Coordinated noun phrases modifying another noun are carefully excluded from the data (BNC):

- (7) a. Labour's objectives in [education and training] are ambitious.  
 b. ... good relationships with your [local press, radio and television] are essential.  
 c. ... how the ownership of [information and technology] is perceived.

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4) The grammaticality contrast in the following examples supports this claim:

- (1) a. Either Dana or Lee is/are going to lead the parade.  
 b. Kim and Terry are/\*is happy. (Chan Chung 2006: 25)

In (7a-c), coordinated noun phrases are not in subject position. Here, it is the underlined elements that bear agreement information.

Third, examples like (8) are also eliminated from the data, since in (8), the head noun containing the number information of the subject is the underlined element (i.e. list) rather than the coordinated noun phrase (BNC):

- (8) \*A list of their names and addresses are included to be added to your direction.

Fourth, only present tense non-modal verbs agreeing with coordinated noun phrases are included in the data, since English past tense verbs and modal verbs do not have agreement morphology.

### 3.2 The distribution of singular and plural agreement with coordinated subjects

There were 988 tokens in total observing the four conditions which I presented in the previous section. In Table 1, which lists singular and plural agreement, it is clear that plural agreement (93.7%) is far more frequent than singular agreement (6.3%).

Table 1: Frequencies of singular and plural agreement between coordinated NPs and verbs

	Tokens	%
Singular agreement	62	6.3 %
Plural agreement	926	93.7 %
Total	988	100%

Table 2 presents frequencies of coordinated NPs, classified into four groups based on four possibilities of number combinations of each noun conjuncts. In most cases (89%), the conjuncts share the same number information with its pair (Group 1 and 2). Coordinated NPs with plural noun conjuncts (Group 2) are the highest in tokens (474) and percent (48%), followed by the second highest, NPs with singular conjuncts (Group 1: 405 tokens, 41%). Asymmetric number combinations occupy

11% (Group 3 and 4), where [pl.+sg.] sequences (63 tokens, 6.3%) slightly outnumber [sg.+pl.] sequences (46 tokens, 4.7%).

Table 2: Frequencies of coordinated NPs with different number combinations

	Tokens	%
Group 1. (sg.+sg.)	405	41%
Group 2. (pl.+pl.)	474	48%
Group 3. (sg.+pl.)	46	4.7%
Group 4. (pl.+sg.)	63	6.3%
Total	988	100%

The results in Table 1 and Table 2 exhibit partial information about NP coordination and agreement: i) Table 1 shows that plural agreement is general as noted in Chan Chung (2006), and ii) Table 2 displays the four possibilities of number combinations in coordinated noun phrases. The unification of these results (in Figure 1 and Table 3) shows that the singular agreement is limited exclusively where noun conjuncts are both singular. This suggests that the agreement with coordinated NPs can be accounted for in syntactic terms rather than by 'strategies', because there is systematicity at least in the case of agreement involving NPs coordinated with and. Our next concern is, then, how to separate the singular agreement from the general rule.

Figure 1: number agreement in coordinated NPs with different number combinations

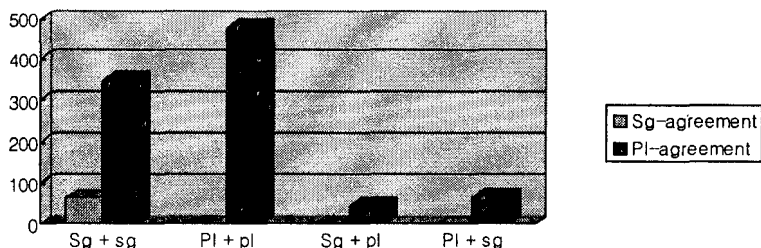


Table 3: number agreement in coordinated NPs with different number combinations

	the grammatical number of conjuncts			
	<i>sg.+sg.</i>	<i>pl.+pl.</i>	<i>sg.+pl.</i>	<i>pl.+sg.</i>
Singular agreement	62	0	0	0
Plural agreement	348	474	46	64

### 3.3 When is the singular agreement possible?

In the previous section, we observed that singular agreement with coordinated NPs occurs only when both conjuncts are singular in number. It is noticeable that when singular verb agrees with a and-coordinated NP, the noun conjuncts denote inanimate abstract properties as in (9). Note that in (9c), singular agreement is ensured by the indefinite determiner, *A*.

- (9) a. ...this proportion can be increased if extra [care and time] is taken looking for the protozon.  
 b. But it will become more of a factor as more [design and development] is shifted overseas.  
 c. A certain [skill and training] is needed to make VTR material  
 d. ...good medical [advice and treatment] is not often essential.  
 e. [Tough and action] is then structurally determined. (BNC)

There was only one exception from the corpus: in (10), an and-coordinated NP with singular conjuncts denoting concrete property agrees with a singular verb. I assume that the singular agreement in (10) is an impropriety in speech, since this is an excerpt from an interview.

- (10) ...\*my [father and mother] was left. (BNC)

Some of the coordinated NPs occurred repeatedly like a fixed expression as in (11) and (12):

- (11) a. ...despite the fact that the [science and technology] is world



class.

- b. ...about how much [science and technology] is studied in an infants' school...
  - c. ...[science and technology] is thought to justify the inclusion of these subjects...
  - d. ...this exhibition is to make people realize that [science and technology] is not as difficult as some people would.
- (12)
- a. ...[law and order] is a battle between the RUC and Catholics.
  - b. ...since [law and order] is the one subject on which every single one has instinctive...
  - c. If [law and order] is seen as a key issue, it will strengthen the Home...
  - d. If [law and order] is beginning to break down in the north of Somalia...
  - e. ...that's as far as [law and order] is concerned er making decisions.
  - f. [Law and order] is also likely to become a burning election issues...
- (BNC)

A close examination upon the data revealed that singular agreement is allowed when the conjuncts denoting abstract properties are merged into a single entity. However, plural agreement is not prohibited even if both noun conjuncts have abstract properties:

- (13)
- a. [Management training and development] are not encouraged as much as in large organizations...
  - b. This argument assumes that [space and time] are infinitely divisible...
  - c. In addition to this, [pruning and training] are vital functions in the cultivation of the vine.
  - d. [Science and technology] are supposed to be two keystones of Mikhail Gorbachev's attempts...

In (13c), plural agreement is demanded since a plural noun, functions, refers to the noun conjuncts, [pruning and training], separately. Likewise, a plural noun phrase, two keystones, denotes each of the conjunct, science, and technology in (13d). Sometimes, both, a correlative coordinator intensifies plural reading of coordinated noun phrases:

- (14) a. ...both their [background and training] are important.  
b. Both [tact and time] are needed to effect this...

These considerations lead us to the following conclusion: in syntactic perspective, singular agreement is limited to coordinated subjects whose conjuncts are both singular, while semantic factors are also involved in delimiting the manifestation of singular agreement.

#### 4. Conclusion

This paper, though being a pilot study, have investigated agreement with noun phrase subjects coordinated by and. We have observed that: first, singular agreement occurs only when both conjuncts are singular in number; second, this is limited to where the meanings of conjuncts are unified into a single semantic property; and third, plural agreement is a general rule regardless of the number of conjuncts unless the meaning of them is merged into a single semantic property. Finally, I suggest that these facts be encoded properly in relevant syntactic analyses.

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